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ABSTRACT

An outline of strategies that can be used to diagnose and remediate the test-taking problems of nursing students has been adapted from an "Outline of Test-Wiseness Principles" conceived by J. Millman, C. H. Bishop, and R. Ebel. The outline consists of two parts: elements independent of the test constructor or test purpose, including time-using, error avoidance, guessing, and deductive reasoning; and elements dependent upon the test constructor or purpose, including consideration of intent and cue-using. An analysis of nursing tests given over a period of 5 years has shown the strategies in the deductive reasoning category to be the most useful. Recognition of cues not included in the original outline also appear to be advantageous. These include Greek-Latin prefixes, negative elements including "all except," and adjectives and adverbs expressing comparison of priority. An analysis of the outline to determine the utility of individual strategies has shown that, in the deductive reasoning category, similarities and differences and stem-option similarities had the greatest utility. In the course content category, organizational patterns had the highest utility. The nursing instructors using the outline can point out to students which strategy is involved, explain it, and illustrate its application on a test. They can also encourage students to do their own diagnosis as each question is analyzed. (The paper includes the outline with examples of the applications of the strategies.) (HOD)

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SUCCESSFUL TEST-TAKING STRATEGIES FOR NURSING STUDENTS

A Paper Presented at National Meeting of the College
Reading Association (Louisville, Kentucky - Oct. 29-31, 1981)

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INTRODUCTION

In a recent article addressed to members of college nursing faculties, Schneider (1979, pg. 36) states: "We have to be more test-wise than the students." Successful test-taking strategies for nursing students must take into account the increasing sophistication of test constructors in this field. The purpose of this paper is to provide guidelines which nursing school instructors can use to help students perform on nursing tests up to the level that their knowledge permits. The specific strategies outlined herein can be used to diagnose and remediate test-taking problems of nursing students and, in some cases, to suggest ways in which students can improve related study skills. They are based on an analysis of several recent examinations given to junior and senior level nursing students.

BACKGROUND

This outline of test-taking strategies has been specifically adapted from an "Outline of Test-Wiseness Principles" conceived by Millman, Bishop, and Ebel (1965) which was intended to be used as a theoretical base for empirical investigations and was associated with a definition of test-wiseness as (pg. 707), "a subject's capacity to utilize the characteristics and formats of the test and/or the test taking situation to receive a high score." Furthermore: "Test wiseness is

logically independent of the examinee's knowledge of the subject matter for which the items are supposedly measures."

A number of sources including Ford (1973), McPhail (1978a), Sarnacki (1979a), and Woodley (1975) document successful use of instruction in test-wiseness to improve test scores in a variety of subjects and on standardized tests and licensing examinations. Methods of instruction have included lecture/readings (Wahlstrom and Boersma, 1968), programmed tests (Slakter, Koehler and Hampton, 1970b; Woodley, 1975), and exercises in writing items incorporating clues (McPhail, 1978b).

The outline (Millman, Bishop, and Ebel, 1965 pg. 711-713) consists of two parts: elements independent of test constructor or test purpose including time-using, error avoidance, guessing, and deductive reasoning; and elements dependent upon the test constructor or purpose including intent consideration and cue-using. The specific strategies which have received the most attention include two items listed under deductive reasoning: elimination of options known to be incorrect (often referred to as the absurd option strategy) and selection of neither or both of two options which imply the correctness of each other (referred to as the similar option strategy). Four items from the cue-using category have also been studied: recognition of a correct option which is longer and in some cases more specific than other options, making an association

between an aspect of the stem and the correct option (referred to as the stem-option strategy), recognition of specific determiners, and location of grammatical clues.

Slakter, Koehler, and Hampton (1970a) found that students learned strategies independently: the stem-option and absurd option appeared in the fifth grade whereas the similar option strategy tended to appear in the eighth grade and the specific determiner strategy in the ninth grade. Thus, the fact that a student uses some strategies successfully does not mean that he cannot benefit from instruction in others.

Crehan, Koehler, and Slakter (1974) found in working with students in grades five to eleven that strategies, once learned, were retained when students were retested two years after the original instruction.

THE REVISED OUTLINE

An analysis of nursing tests given over a period of five years has shown the strategies in the deductive reasoning category to be the most useful. In the cue-using category, the stem-option cue, however, often seemed to involve reasoning rather than recognition, especially on more recent tests. Therefore, this strategy has been moved to the deductive reasoning category in the revised outline. The two strategies which involve looking for similar and dissimilar options have been combined because of the need to use these strategies simultaneously in dealing with two-part items, i.e. those in which the correct answer involves a combination of several items.

Recognition of cues not included in the original outline also appeared advantageous. These include Greek-Latin prefixes, negative elements including "all except", and adjectives and adverbs expressing comparison or priority. In dealing with nurse/client situations, the nurse often has to decide which of several actions is most helpful to the client and/or which should be done first.

In addition to changes in strategies, a broader definition of test-wiseness seemed advisable, one which included content related skills. Test-taking strategies for nursing students should include not only those related to the characteristics of the test, but also those which relate to the perspective, typical organization patterns, and specialized vocabulary of this field. Accordingly, a new category involving content related strategies has been added.

In the revised outline, only minor changes have been made in the time-using, guessing, and error-avoidance strategies as outlined by Millman, Bishop, and Ebel (1965). Two additions have been made to the latter: one suggested by Sarnacki (1979), the other by Helm (1979). Sarnacki (pg. 263) would add: "Take care in marking the appropriate response on the answer sheet." This is especially important when a separate answer sheet is used. Helm (1979, pg. 36) suggests that the student "cover the alternatives, read the stem, and generate his own answers" before reading the options. This strategy

is especially important when, as is often the case, the task requires selection of the best option from among several plausible items. Schneider (1979, pg. 35) directs the test constructor to "Try to keep the options homogenous." Thus, the student is often tempted to choose an incorrect option if he reads the options too soon.

Another strategy that might have been included in the error-avoidance category would have been, "Do not change an answer unless there is a good reason for doing so, such as locating relevant information in a subsequent item." However, Copeland (1972) found that some students change more answers from wrong to right than from right to wrong. What an individual should do, therefore, depends on his experience in changing answers.

The revised outline is as follows:

Test-taking Strategies for Nursing Students¹

I. Elements independent of test constructor or test purpose.

A. Time-using strategies

1. Set up a schedule for progress through the test.
2. Begin to work as rapidly as possible.

¹ This outline has been adapted from "Outline of Test-Wisness Principles" by Millman, Bishop and Ebel (1965, pp. 711-713)

3. Omit or guess at items which resist a quick response.
4. Mark omitted items and items which could use further consideration to assure easy relocation.
5. Use time remaining after completion of the test to reconsider answers.

B. Error-avoidance strategies

1. Pay careful attention to directions, determining the nature of the task.
2. Pay careful attention to the items, determining clearly the nature of the question.
3. Ask examiner for clarification when necessary.
4. Read the stem and attempt to complete the sentence or answer the question before reading the options.
5. Take care in marking the appropriate response on the answer sheet.
6. When time permits, check all answers.

C. Guessing strategy

1. Always guess if right answers only are scored.

D. Deductive reasoning strategies

1. Absurd option: Eliminate options which are

known to be incorrect and choose from among the remaining options.

2. Similarities and differences:
 - a. Choose neither or both of two options which imply the correctness of each other.
 - b. Choose either or one (often one) of two options which imply the incorrectness of each other.
3. Stem-option similarities:
 - a. Recognize and make use of resemblances between an option and an aspect of the stem.
 - b. In "all except" type questions, look for dissimilarities between an option and an aspect of the stem.
4. Utilize relevant content information in other test items.

II. A. Course content strategies

1. Interpret and answer questions in view of the course perspective and general principles. For nursing, these include:
 - a. Nursing is a profession guided by principles.
 - b. A nurse must be aware of which behaviors

are appropriate for her in her role as a nurse and which are appropriate for other health professionals.

- c. A nurse must be ready and able to set priorities in caring for clients.
- d. A holistic approach to health care is preferred.
- e. Good nurse-client communication in working together to solve health problems is important.

2. Organizational patterns: Interpret and answer questions by applying typical patterns of organization.¹ For nursing, these include:

- a. Definition.
- b. Process description.
- c. Cause and effect.
- d. Classification.
- e. Application of principle.

¹ The first four patterns of organization listed below are explained in How to Read the Sciences by W. R. Adams and/or How to Read the Social Sciences by C. M. Brown and Adams. The last pattern is explained in B. S. Bloom's Taxonomy of Educational Objectives.

3. Specialized vocabulary: When a word in an item has more than one meaning, use the course content definition to interpret and answer the question.
4. Visualization: Whenever possible, use a mental picture of the situation to interpret and answer the question. In nursing, this pertains most often to questions involving physical care.

B. Cue-using strategies

In order to apply this strategy, read each word in the stem and options of each item carefully. Underline important words as described below.

1. Recognize and make use of specific determiners.
2. Recognize and make use of adjectives and adverbs expressing priority, importance, and degrees of comparison.
3. Consider the relevancy of specific detail.
4. Pay close attention to not, all except, and other negative elements.
5. Use knowledge of Greek-Latin word parts.

ANALYSIS OF RECENT TESTS

Once the revised outline was developed, several recent tests were analyzed to determine the utility of individual

strategies. Several members of the nursing faculty helped by supplying relevant content information and by evaluating my analysis. The results are shown in the following table.

UTILITY OF TEST-TAKING STRATEGIES IN FOUR 1981 TESTS⁽¹⁾

Tests	<u>I. D. Deductive Reasoning</u>				<u>II. A. Course Content</u>				<u>II. B. Cue-Using</u>					<u>Total No. of Q's On Test</u>
	<u>1.</u>	<u>2.</u>	<u>3.</u>	<u>4.</u>	<u>1.</u>	<u>2.</u>	<u>3.</u>	<u>4.</u>	<u>1.</u>	<u>2.</u>	<u>3.</u>	<u>4.</u>	<u>5.</u>	
JR Spring	13	23	14	7	2	23	0	4	2	26	4	5	13	82
SR Spring	4	9	16	3	3	21	0	9	0	14	2	10	7	43
JR Fall	10	14	26	7	14	23	4	1	4	18	8	15	6	90
SR Fall	5	16	12	6	6	27	0	2	0	18	4	9	6	61
TOTALS	32	64	68	20	25	95	4	16	6	76	18	39	32	276

(1) These data should be considered as subjective data only. Most questions have been categorized under several headings and it was often difficult to decide to which of several categories to assign a particular question. This is especially true of the deductive reasoning strategies. It is often difficult, for example, to choose between I. D.1 and I. D.3.b.

An analysis of the results in the table above shows that in the deductive reasoning category, D.2. Similarities and differences and D.3. Stem-option similarities had greater utility than the other strategies in this category.

In the course content category, A.2. Organizational patterns had the highest utility. A more detailed analysis of this strategy showed that 2.a. Process description and 2.c. Cause and effect were the most frequently encountered patterns. Often, both could be applied to the same question. In the case of the strategy dealing with course perspective and principles 1.b. relating to nurse role and 1.e. relating to nurse-client communications were most often seen. Both 1.c. which involves setting priorities and 2.b. Process description are often cued by adjectives and adverbs expressing priority, importance, and degrees of comparison. Thus, it is not surprising that B.2. listed under Cue-using strategies also has high utility.

USE OF THE OUTLINE

There are several ways in which this outline can be used to diagnose and remediate test-taking problems of nursing students. When time permits, an individual diagnosis of test-taking difficulties should be made based on results of a recent test. The student is asked to reread each question she answered incorrectly and give her reasons for selecting an incorrect option. Using the outline, the instructor notes

which strategy is involved, explains it, and illustrates its application. In the examples given below, it should be noted that several strategies are listed after each question.

This does not mean that an individual student must employ all of these strategies; only that any of them could be used.

If check marks are placed beside each strategy as the diagnosis proceeds, the student will know on which strategies she needs to concentrate. Later, the student can be asked to apply a strategy she has learned to select the correct answer for an item previously answered incorrectly. Often, she will be able to do so.

When working with small groups, the instructor can introduce the outline; then encourage each student to do her own diagnosis as each question is analyzed. Alternatively, students who have had some instruction in test-taking strategies may be able to use the outline to do a self-diagnosis.

EXAMPLES

Applications of the strategies in the portions of the outline that deal with individual items are exemplified in the following eight questions, all taken from recent examinations.

1. Nursing care is planned for Mrs. S to include adequate intake of fluids, deep breathing, frequent coughing, and administration of prescribed antibiotic medications. An appropriate outcome criterion for this patient would be the:
 - a. doctor will discharge patient
 - *b. patient will display a respiratory rate between 12-18/minute
 - c. patient will recover within a week
 - d. respiratory therapist will guide the patient in TCDB exercises

Strategy: Note meaning of "outcome criterion"
Eliminate d
Eliminate a and c,
select b

II.A.3. Specialized vocabulary
I.D.1. Absurd option
II.B.2. Specific detail

2. A therapeutic relationship between a nurse and client involves which of the following behaviors?
- a. performing necessary nursing tasks
 - b. making all patient care decisions
 - c. encouraging the patient to depend on the nurse
 - *d. assisting the client to participate in solving his problems

Strategy: Eliminate b because
of "all"
Eliminate c because
it is like b
Select d because it
involves cooperation
between nurse and
client

II.B.1. Specific
determiner
I.D.2. Similarities
and differences
I.D.3. Stem-option
similarities
and/or II.A.1. Course perspec-
tive, e. nurse/
client

3. A homeostatic mechanism is regulated by:
- a. an internal sensory input
 - *b. a negative feedback system
 - c. the hypothalamus
 - d. the pituitary gland

Strategy: Select b because of
information in next
question, option c

I.D.4. Relevant
content²

² The utility of this strategy is lessened by the fact that interdependent questions are often separated by several pages. Recently, an attempt has been made to avoid them altogether, but they do occur occasionally.

4. All of the following statements about homeostatic mechanisms are true except:
- a. they allow the body to compensate for such things as change in external temperatures
 - *b. they are perfectly balanced, allowing no margin of error
 - c. they create a balance by negative feedback system
 - d. they work automatically and are self-regulatory

Strategy: Note "all ... except

II.B.4. Negative
elements

Select b because of
"perfectly" and "no"

II.B.1. Specific
determiners

and/or

I.D.3b. Stem-option
dissimilarities

5. Andrea, gravida 2 para 1, is at approximately 37 weeks gestation. She was admitted to the labor suite with a possible placenta previa. Upon admission, the nurse's most appropriate action would be to:
- a. perform a vaginal exam
 - b. give the patient a cleansing enema
 - c. shave the patient's abdomen and perineal area
 - *d. check the fetal heart tones and mother's blood pressure

Strategy: Note superlative
adverb "most"

Select d because it
has the highest
priority and falls
within nurse role

II.B.2. Comparatives

II.A.1. Course perspective
b. role
c. priorities

The following two questions refer to Mrs. S

6. Mrs. S is in Russell's traction for a fractured femur of the left leg and her bed linen needs changing. The nurse would direct Mrs. S to do all of the following except:

- a. flex the right hip and knee and place the right foot flat on the mattress
- b. extend both arms and grasp the trapeze with both arms
- c. pull up on the trapeze and push downward on the right leg
- *d. bend at the waist while pulling up on the trapeze

Strategy: Note "all...except"

II.B.4. Negative
element

Visualize the situation
and select d because
bending at the waist
would make it difficult
to lift the body off
the bed

II.A.4. Visualization

7. Mrs.S complains of numbness, tingling, and coldness in her left foot. The foot appears pale and swollen and is cold to touch. The complication is likely a:
- a. local sensory nerve paralysis
 - *b. compromise of arterial blood supply
 - c. pressure sore
 - d. compromise of venous blood supply

<u>Strategy:</u> Note meaning of "compromise"	II.A.3. Specialized vocabulary
Think through circulatory process and relationship between "pale...cold foot" and "arterial blood supply" and select b (Note that b and d are dissimilar options; II.d.2. could also be applied here)	II.A.2. Organization patterns b. Process description c. Cause and effect

8. The following are examples of non-verbal communication
except:

- a. paralanguage
- *b. neologisms
- c. kinesics
- d. proxemics

Strategy: Note "all...except"

Analyze meaning of
"non", "para",
"logisms", etc.

Select b because
"neologisms" are
verbal, not "non-
verbal" behavior

II.B.4. Negative
elements

II.B.5. Greek-Latin
word parts

I.D.3b. Stem-option

RELATED STUDY SKILLS

An offer of instruction in test-wiseness often motivates students who would otherwise be hesitant to do so to work with the study skills specialist. For this reason, it is often wise to begin a study skills course this way. Furthermore, the correlation between good test-taking skills and grade point average has been found to be higher than that for other study skills (Kirkland and Hollandsworth, 1979). Finally, an analysis of test-taking difficulties, especially those related to course content, often motivates students to work on other study skills. Failure to analyze organizational patterns while taking a test, for example, can indicate a need to concentrate on this skill while taking notes or reading a textbook. Likewise, failure to recognize Greek-Latin word parts can show a need to work on vocabulary building skills.

An important aspect of instruction in test-taking skills is the treatment of test-related anxiety. Worry about the outcome of the test can interfere with the student's attention to the test-taking task according to Deffenbacher (1978) and Wittmaier (1972). Knowledge of successful test-taking strategies can provide the student with a way to deal with his anxiety when the suggestion is made that he replace self-deprecatory statements with rehearsal of useful strategies.

USING THE OUTLINE IN OTHER COURSES

One might ask whether this outline can be used for tests in other courses in the nursing program. To do so would require an analysis of the course perspective, organizational patterns, and specialized vocabulary skills. For a microbiology course, for example, classification would be an important pattern of organization and Greek-Latin word parts would be an important vocabulary skill. Once this condition is met, the outline should provide a useful tool for success on tests in a variety of subjects.

RECOMMENDATIONS FOR FURTHER STUDY

A new State Board Licensing Exam for registered nurses will be given for the first time in July 1982. The plan for this exam as described by McQuaid and Sheridan (1980), specifies the nursing behaviors to be tested and the way they will be tested, i.e. the student will be required to make decisions as to how she should behave in nurse/client situations commonly encountered in the practice of nursing which are critical to providing safe and effective care. Items are to be categorized according to Bloom's (1956) Taxonomy of Educational Objectives. The majority of items will be at the application and analysis levels; fewer items will test knowledge and comprehension.

Further study, therefore, should include an analysis of items in relation to the cognitive levels in Bloom's taxonomy,

a diagnosis of errors which includes this element, and a description of skills needed to deal with items involving application and analysis.

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